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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,292	10/04/2001	Jen-Houne Hannsen Su	82,593	3357

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Naval Surface Warfare Center
Carderock Division
Office of Counsel, Code 004
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EXAMINER
BURCH, MELODY M

ART UNIT	PAPER NUMBER
3683	

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/972,292	Applicant(s) SU ET AL.	
	Examiner Melody M. Burch	Art Unit 3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. The claims are objected to because of the following informalities including but not limited to:

- The phrase "said streamlined resilient element" found first in line 14 of claim 1 and throughout the claims should be changed to --said at least one streamlined resilient element-- to maintain consistent terminology;

Similar changes should be made throughout the claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are replete with 112 issues including but not limited to:

- The phrase "said first plane geometric plane" in line 11 of claim 1 lacks proper antecedent basis;
- The phrase "a first said single frequency bandwidth" in line 11 from the bottom of claim 1 is indefinite, particularly the phrase "a first said". It is

unclear whether Applicant intends to claim a first of several single frequency bandwidths or if the single frequency bandwidth;

- The phrase "said first frequency bandwidth" in the last line of claim 1 lacks proper antecedent basis;
- In claims 5 and 6, for example, it is unclear to the Examiner whether all of the shapes are intended to be claimed. Examiner recommends re-inserting the term "if" since it clarifies this issue.

The list is not intended to be exhaustive.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5899443 to Su in view of 5934653 to Rivin.

Re: claims 1, 3, 5, 6, 8, 9, 11, 14 and 27. Su shows and discloses in figures 9 and 10 a mount suitable for passive-active vibration isolation in associated with variable loading, the mount comprising a first member 14e for attaching to a first entity, a second member 16e for attaching to a second entity, at least one streamlined resilient member 44, and at least one structurally-positionally and functionally-directionally collocational combination of a sensor 22 and an actuator 20, each resilient element at least

substantially consisting of an at least substantially solid elastomeric material as disclosed in col. 10 line 40 and being interposed between the first member and the second member, the first member approximately describing a first geometric plane, the second member approximately describing a second geometric plane which is approximately parallel to the first geometric plane, each resilient element at least describing a profile in a third geometric plane which perpendicularly intersects the first geometric plane and the second geometric plane, each resilient element being characterized by low dynamic load transmissibility of vibration in approximately a single frequency bandwidth over a broad range of loading to which the resilient element is being subjected, each resilient element being characterized by deflection when subjected to the loading, each streamlined resilient element being predisposed to passively reducing vibration, the at least one streamlined resilient element thereby being capable of effectuating overall passive reduction of the transmission of vibration from the first member to the second member as disclosed in lines 2-3 of the abstract, the overall passive reduction being of vibration in approximately the first frequency bandwidth over a broad loading range of the first entity, each the collocational combination having a corresponding region of the second member, each the collocational combination being capable of generating a sensor signal and an actuator vibratory force, the sensor signal representative of the local vibration in the corresponding region and being representable as a control signal, the vibratory force being representative of the control signal, each the collocational combination thereby being capable of effectuating in the corresponding region, localized active reduction of

the transmission of local vibration which has reached the second member subsequent to the effectuating of the overall passive reduction as disclosed in lines 2-3 of the abstract, the localized active reduction being of vibration in a non-first frequency bandwidth which differs from the first frequency bandwidth as disclosed in col. 11 lines 23-24. Su also shows in figure 4 a feedback loop system including a PID-type controller 30, the PID-type controller generating at least one control signal which is a function of the at least one sensor signal.

Su does not specifically disclose the limitation of the at least one resilient element being streamlined to the same extent as Applicant's (particularly with the profile being a curved profile in the third geometric plane) or the limitation of the resilient elements being characterized by non-linear deflection such that the predisposed to passively reducing vibration at the single frequency bandwidth regardless of the extent of the loading within the range to which the resilient element is being subjected.

Rivin teaches in col. 4 line 8 and in figure 1 the use of a resilient element in a mount being a streamlined resilient element to the same extent as Applicant's.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the shape of the resilient member of Su to have been streamlined having the curved profile in the third geometric plane perpendicular to the first and second geometric planes, as taught by Rivin, in order to provide a means of enabling the resilient element to accommodate static and dynamic loads between connected structural components in all directions as taught in col. 4 lines 5-8 of Rivin.

Rivin teaches in col. 3 line 15 the use of the streamlined resilient element being non-linear which by definition would result in the vibration reduction not being directly proportional to the loading. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resilient elements of Su, as modified, to have been characterized by non-linear deflection such that the passive vibration reduction occurs at a single bandwidth regardless of the extent of the loading, in view of the teachings of Rivin, in order to provide a desired or optimum load-deflection characteristic for a particular structural connection as discussed in col. 3 lines 7-8 of the Rivin reference.

Re: claims 2, 4, 10, 12, and 20. Su, as modified, shows at least one of the streamlined resilient element including at least one truncation surface shown immediately below element 14, each truncation surface adjoining one of the first member and the second member. See figure 2 of Rivin.

Re: claims 7, 13, 17, 21, 22, and 24. Su shows and discloses in figures 9 and 10 a method for reducing transmission of vibration of a first entity 24 to a second entity 26, the method comprising: providing a spring assembly 44,14e,16e which includes at least one streamlined resilient member 44, an upper securement member 14e and a lower securement member 16e, the at least one resilient member being essentially elastomeric and being for passively reducing the transmission of vibration existing in at least a plurality of frequencies falling within a generally constant bandwidth in relation to a range of loading imposed upon the at least one streamlined resilient element by at least one of the first entity and the second entity, the range being between a minimum

degree of loading and a maximum degree of loading, each resilient element being shaped so as to at least substantially describe one of a sphere, a prolate spheroid, a cylinder, a torus, and a torus segment, and engaging with the spring assembly a feedback loop system as shown in figure 4, the engaging including: establishing at least one collocation of a sensor 22 with a corresponding vibratory actuator 20 so that the sensor and the corresponding vibratory actuator are each coupled with the lower securement member at approximately the same location and so that the sensor senses and the corresponding vibratory actuator actuates in approximately the same direction and in approximately the same locality of the lower securement member, connecting each of the sensor and each of the vibratory actuator with a processor/controller 30 so that for each collocation the sensor generates a sensor signal representative of the vibration of the locality, the processor-controller generates a control signal representative of the sensor signal and the vibratory actuator generates a vibratory force representative of the control signal and providing power 34,36 for the feedback loop system, and mounting the first entity with respect to the second entity the mounting including fastening the first entity to the upper securement and fastening the second entity with respect to the lower securement member, wherein in series the spring assembly effects passive reduction of the vibration at the first plurality of frequencies then the feedback loop system effects active reduction of the vibration at a second plurality of frequencies, and wherein the at least one frequency among the second plurality of frequencies is not among the first plurality of frequencies as disclosed in col. 11 lines 22-24. Examiner takes Official Notice the fact that the range between a

minimum and maximum degree of loading in a vibration isolation system is a parameter that would be determined by routine experimentation by one of ordinary skill in the vibration isolation art in order based on the particular application in which the vibration isolation apparatus would be utilized. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the minimum to maximum range of degree of loading of the vibration isolation apparatus of Su to have included a maximum degree of loading being no less than about ten times the minimum degree of loading (or any other maximum amount as determined by routine experimentation depending on the application) in order to provide a means of enabling vibration isolation between a first and a second entity under both mild and harsh vibration conditions.

Rivin teaches in col. 4 line 8 and in figure 1 the use of a resilient element in a mount being a streamlined resilient element to the same extent as Applicant's.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the shape of the resilient member of Su to have been streamlined having the curved profile in the third geometric plane perpendicular to the first and second geometric planes, as taught by Rivin, in order to provide a means of enabling the resilient element to accommodate static and dynamic loads between connected structural components in all directions as taught in col. 4 lines 5-8 of Rivin.

Re: claims 15, 16, 18, and 19. Rivin teaches in col. 5 lines 54 the use of a torus shape resilient element and teaches in col. 6 lines 24-26 that the resilient elements can take on any number of configurations to achieve the non-linear characterisitics. It

would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resilient element of Su, as modified, to have been spherical, prolate spherical, torus, or any appropriate shape as determined by routine experimentation in order to provide a means of effecting a desired amount of non-linear vibration isolation as taught by Rivin.

Re: claims 23, 25, and 26. Su, as modified, shows at least one of the streamlined resilient element including at least one truncation surface shown immediately below element 14, each truncation surface adjoining one of the first member and the second member. See figures 1 and 2 of Rivin.

Double Patenting

6. Claims 14, 22, and 24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 12, and 18 of U.S. Patent No. 5899443 to Su in view of Rivin. Although the conflicting claims are not identical, they are not patentably distinct from each other because Su '443 claims the invention substantially as set forth above, but does not include the limitation of the spring assembly including at least one streamlined resilient element and does not disclose the claimed minimum to maximum range of degree of loading.

Rivin teaches in col. 4 line 8 the use of a resilient element in a mount being a streamlined resilient element.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the shape of the resilient member of Su to have been streamlined, as taught by Rivin, in order to provide a means of enabling the

resilient element to accommodate static and dynamic loads between connected structural components in all directions as taught in col. 4 lines 5-8 of Rivin.

Examiner takes Official Notice the fact that the range between a minimum and maximum degree of loading in a vibration isolation system is a parameter that would be determined by routine experimentation by one of ordinary skill in the vibration isolation art in order based on the particular application in which the vibration isolation apparatus would be utilized. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the minimum to maximum range of degree of loading of the vibration isolation apparatus of Su to have included a maximum degree of loading being no less than about ten times the minimum degree of loading (or any other maximum amount as determined by routine experimentation depending on the application) in order to provide a means of enabling vibration isolation between a first and a second entity under both mild and harsh vibration conditions.

Response to Arguments

7. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

mmb 8/21/03
mmb
August 21, 2003

M. C. 8/21/2003
MATTHEW C. GRAHAM
PRIMARY EXAMINER
GROUP 310